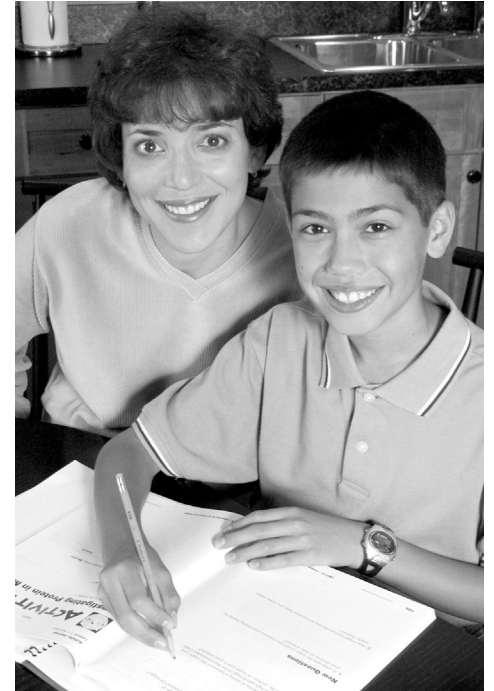


A Standards Guide for Families



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www.OhioAcademicStandards.com

Reading
Writing
Mathematics
Science
Social Studies

What is Expected
in Grade

4



Standards now,
knowledge for a lifetime.

Dear Family,

Education in Ohio is changing. This change will help your child succeed in school. It also will better prepare your child for success in college or the work force upon high school graduation.

The basis of this change is new **academic content standards**, which define what your child should know and be able to do at every grade level. There are new standards in English language arts (reading and writing), mathematics, science and social studies.

These new standards let teachers know what they are expected to teach and students know what they are expected to learn. Standards also help educators identify and measure what students know and can do.

Part of this system will include achievement tests to determine how well your child is making progress toward these new standards. These tests will replace the current Ohio Proficiency Tests.

The information in this guide will give you a sample of some of the things your child will need to know and be able to do in reading, writing, mathematics, science and social studies for the fourth grade. The guide also has helpful practice problems, tips and activities you can do with your child to help him or her achieve the new standards.

*It is important to note that the information in this guide is **not** the complete set of standards; rather, this information is designed to highlight a select number of skills that your child should know and be able to do in the fourth grade. The official standards documents, designed for teachers' use, are in some cases several hundred pages long. This booklet has been reduced to this size for your convenience.*

To view the complete set of standards, visit the Ohio Department of Education Web site at www.ohioacademicstandards.com.

I sincerely thank you for the time, interest and energy you are investing in your child's education. I hope this guide is one of many tools you use to help your child reach these new standards and achieve success inside and outside the classroom.

Sincerely,

Susan Tave Zelman
Superintendent of Public Instruction

Language Arts



Acquisition of Vocabulary

What this means: Being able to recognize clues in reading, ask questions, listen and converse with adults and peers.

- Determine the meaning of synonyms, antonyms, homophones, homonyms and homographs.

Check your understanding: **Synonyms, Antonyms, Homophones, Homonyms and Homographs**



Synonyms:	Words that have similar meanings (<i>beautiful</i> and <i>pretty</i>).
Antonyms:	Words that have opposite meanings (<i>fast</i> and <i>slow</i>).
Homophones:	Words with different origin and meaning but the same pronunciation as another word, whether or not spelled alike (e.g., <i>hair</i> and <i>hare</i>).
Homonyms:	Words with different origin and meaning but the same oral or written form as one or more other words such as <i>bear</i> (an animal) vs. <i>bear</i> (to support) vs. <i>bare</i> (exposed). Homonyms include homophones and homographs.
Homographs:	Words with the same spelling as another word, whether or not pronounced alike such as <i>pen</i> (a writing instrument) vs. <i>pen</i> (an enclosure) or <i>bow</i> (and arrow) vs. <i>bow</i> (of a ship).

- Identify word origins to figure out the meaning of unknown words.
- Understand what prefixes (e.g., **re**play) and suffixes (e.g., nicer**er**) are.
- Develop an understanding of new uses of words and their concepts such as similes and metaphors.



Check your understanding: **Similes and Metaphors**

- Simile:** Comparing two unlike things using *like* or *as* (e.g., The girl swims *like* a fish).
- Metaphors:** Comparing two unlike things using a form of the verb “to be” (e.g., The boy’s smile *is* a ray of sunshine).



Reading Process – Concepts of Print, Comprehension Strategies and Self-Monitoring Strategies

What this means: Through reading, students will understand the basic concepts and meanings of different types of print materials.

- Establish a purpose for reading (e.g., to find out, to interpret, to enjoy).
- Compare (what is alike) and contrast (what is different) information.
- Answer **literal** (directly stated), **inferential** (indirectly stated and requires more information) and **evaluative** (requires the reader to come up with a response based on the reader’s opinion) questions to show understanding about what has been read or watched.



Reading Applications – Informational, Technical and Persuasive Text

What this means: Reading, understanding, explaining and critiquing different kinds of written materials such as magazines, essays, maps and online sites.

- Make inferences about the reading material based on the title page, table of contents and chapter headings.
- Locate important details about a topic using sources such as books, magazines, newspapers and the Internet.
- Draw distinctions between fact and opinion.
- Understand the meaning of main ideas and supporting details.



Reading Applications – Literary Text

What this means: Organizing and interpreting results through collecting data to answer questions and solve problems, show relationships and make predictions about different types of literature (e.g., fables, tales, short stories).

- Identify how the setting (time, location) influences the reading selection.
- Identify the major events of a plot sequence (order in which events occur), identify the conflict (problem) and how it was resolved.
- Examine meaning as readers and understand the point of view of others (e.g., characters, authors, narrators).
- Identify the speaker and recognize the difference between first- and third-person narration.



Check your understanding: **First- and Third-Person Narration**

- First-person narration:** The point of view is that of the main character.
- Third-person narration:** The point of view is that of someone outside of the story.



Writing Processes

What this means: Using the steps of prewriting, drafting, revising and editing to publish different types of writing.

- Learn to organize thoughts for the purpose of writing (e.g. lists, brainstorming, diagrams).
- Use simple, compound and complex sentences.



Check your understanding: **Simple, Compound and Complex Sentences**

- Simple:** Tom ate food.
- Compound:** He ate food, and he watched television.
- Complex:** The boy, who is 10 years old, watched television.

- Use resources such as dictionaries or thesauruses to choose more effective vocabulary.
- Proofread writing and edit it for grammar and spelling.
- Polish a writing piece for publishing (e.g., to display or share with others).

Writing Applications

What this means: Learning about, using and choosing appropriate words for different kinds of writing, from letters to scientific reports, and for different audiences.

- Use narrative writing (writing that tells what happens) to put events in order, to include descriptive words and vivid language, and to develop characters, setting (time, location) and plot.
- Write letters such as thank you notes that include all the proper parts: date, proper salutation, body, closing and signature.
- Produce informal writings such as messages, journals or notes.

Writing Conventions

What this means: Understanding and applying punctuation, grammar and spelling rules.

- Use commas, end marks, apostrophes and quotation marks correctly.
- Use conjunctions (e.g., or, and, but) and interjections (e.g., Wow!).
- Use prepositions and prepositional phrases (e.g., in front of, beneath, behind, on top of).
- Use subjects and verbs that are in agreement.

Check your understanding: **Subject-Verb Agreement**

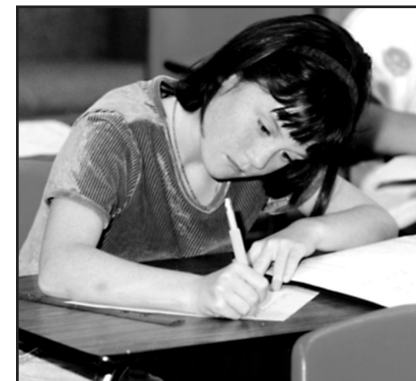
In agreement: The girls *are* singing.
Not in agreement: The girls *is* singing.



Research

What this means: Knowing how to gather information in all subjects using different kinds of tools (e.g., books, computers, magazines) and communicate what is found.

- Choose a topic and questions for research and develop a plan for gathering information.
- Locate sources and collect information from several sources such as school library catalogs, online databases and electronic resources.
- Create categories to sort and organize charts, tables or organizers.



Communication: Oral and Visual

What this means: Delivering presentations on different topics for different types of audiences.

- Demonstrate active listening skills such as asking questions or making visual contact.
- Know the difference between fact and opinion when information is presented.
- Give presentations that present ideas/events in sequential order and have a clear focus; show an understanding of the topic; include a clear introduction, body and conclusion; use visuals; and name sources.
- Develop skills in delivery, speaking clearly, using proper pace and volume, and displaying appropriate body language.

Tips and Activities

- ✓ Give your child directions to the store. After listening carefully, your child should be able to repeat the directions. Go for a walk! Check to make sure the directions are right.
- ✓ Put your junk mail to good use. Show your child how to highlight or underline words with affixes (prefixes or suffixes).
- ✓ Does your child's room need some organization? Organize his or her things through classification. Ask your child to think of ways to organize his or her toys or clothes drawers, closets, etc. Write down a list sorting the items into groups.
- ✓ Take a walk outdoors and look for examples of items in and around your yard that can be written as compound words. Examples: driveway, sidewalk, butterfly, rainbow, doorknob, keyhole, walkway, birdbath, birdhouse.
- ✓ Invent a story to tell your child. Every now and then stop and have your child fill in the next part. This is a great way to help your child use his or her creative mind and both of you can have some fun, too!
- ✓ Pull out an atlas, an encyclopedia or a health book. With your child, find the index and look through it together. Now, give your child clues to find certain items. Examples: "If I need to find something about zebras, where would I look?" "If I have an upset stomach, where do I look in the health book?"
- ✓ Present each other with a topic sentence (a sentence with a main idea) and see who can come up with two sentences about that subject.

Mathematics



Numbers, Number Sense and Operations

What this means: Using number sense and number skills, from basic counting to paper and pencil calculations, to age-appropriate use of calculators and computers.

- Recognize and write numbers in both fraction and decimal forms, such as $5/10 = 0.5 =$ "five tenths."
- Round numbers to a given place value such as to the nearest 100 or 1,000.
- Use mental math strategies to make estimates and to check the accuracy of computations.
- Add and subtract decimals and fractions with like denominators (e.g., $2/4 + 1/4$).
- Solve problems that involve counting money and making change using coins and dollar bills.
- Solve addition, subtraction, multiplication and division problems that have more than one step.



Measurement

What this means: Making accurate measurements using the appropriate tools, terms and technology.

- Relate the number of units to the size of units used to measure an object.

Check your understanding: **Using Units to Measure Objects**



Compare the number of cups it takes to fill a pitcher to the number of quarts it takes to fill the same pitcher.

- Describe perimeter as surrounding, area as filling a two-dimensional shape (such as a circle or a square), and volume as filling a three-dimensional object (such as a cylinder or cube).

- Convert measurement units such as inches to feet, kilograms to grams or quarts to gallons.






Geometry and Spatial Sense

What this means: Identifying, classifying and analyzing one-, two- and three-dimensional objects, understanding their properties and using that knowledge to solve problems.

- Identify intersecting, parallel and perpendicular lines.

Check your understanding: **Lines**



Intersecting:  Perpendicular:  Parallel: 

- Describe similarities and differences of two-dimensional shapes (e.g., squares, rectangles, parallelograms).
- Compare the characteristics of three-dimensional objects (e.g., cones, cubes, cylinders).
- Find examples or models of points, lines and planes in everyday objects and in the environment.



Patterns, Functions and Algebra

What this means: Representing patterns and relationships using tables, graphs and symbols, and using them to solve problems.

- Use words, tables and graphs to describe and answer questions involving patterns and other mathematical relationships.
- Use numbers and symbols to represent problem situations.
- Describe how a change in one number or variable affects a related value (e.g., as one value increases, the other decreases).



Data Analysis and Probability

What this means: Organizing and interpreting results through data collection to answer questions, solve problems, show relationships and make predictions.

- Use tables, bar graphs, line plots and line graphs to display and compare data.
- Answer questions using information in tables, charts and graphs.
- Use range, median and mode to make comparisons among sets of data.

Check your understanding: **Range, Median and Mode**



The ages of seven members of a soccer team are 8, 9, 9, 9, 10, 11, 11, 12 and 13.

The **range** in ages of the team members is 5 years (the difference between the youngest and oldest members).

The **median** age of the team members is 10 years old (the “middle” number when the ages are arranged in order from least to greatest. Half of the members are younger than 10 and half are older than 10).

The **mode** is 9 years old (there are more team members who are 9 than any other age).

- Describe the likelihood of simple events and chance situations.



Mathematical Processes

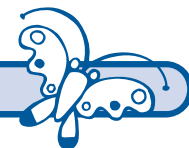
What this means: Applying problem-solving and reasoning skills and communicating mathematical ideas.

- Use a variety of problem-solving strategies.
- Use reasoning to match solutions to problem situations (e.g., 6 cars are needed for 26 students if each car can hold 5 students).
- Use everyday and mathematical language to explain mathematical ideas and solutions.

Tips and Activities

- ✓ Have your child search the newspaper ads for new car prices. Cut the prices out and arrange these numbers from least to greatest and vice versa. Tell your child to line the numbers up; then look to see what place the digits are in to determine how they should be arranged.
- ✓ Create a matching game that matches words for geometric shapes with pictures of the shapes. Ask your child to create the cards for the game.
- ✓ Understanding and using fractions are an important part of fourth grade. Have your child identify fractional parts of an object or group of objects. Help your child make a set of fraction cards.
- ✓ Engage in estimations with your child. Ask “How far do you think it is from here to the corner? The mall? School?” “How tall do you think that tree is?” When you go shopping, say “I can only spend \$25, so you try to estimate when we are close to the limit.”
- ✓ Show your child how to make hand shadows on a wall using a lamp or flashlight. Have your child cut a shape such as a square out of heavy paper. Ask your child to use the square to make a square-shaped shadow on the wall. What happens when your child holds the square at various angles? What other shapes can he or she make using the square?
- ✓ Work with your child to do a simple investigation such as keeping track of the times for the sunset or sunrise from the newspaper or television weather report over a period of time (such as on the Monday of every week for five or six weeks). Have your child make a graph of the sunrise or sunset times and talk about how the times are changing.

Science



Earth and Space Sciences

What this means: Understanding the interconnected cycles and systems of the universe, solar system and Earth.

- Explain that air surrounds us, takes up space, moves around us as wind and may be measured using barometric pressure.

Check your understanding: **Barometer**



A **barometer** is an instrument for determining the pressure of the atmosphere.

- Identify how water exists in the air in different forms (e.g., clouds, fog, rain, snow, hail) and explore how water changes from one state to another (e.g., freezing, melting, condensation, evaporation).
- Describe the weather which accompanies cumulus, cumulonimbus, cirrus and stratus clouds.





Check your understanding: **Clouds**

Cumulus: Cumulus clouds are puffy with flat bottoms. They are often present with fair weather.

Cumulonimbus: Cumulonimbus clouds are large, high clouds which may cause rain and thunderstorms.

Cirrus: Cirrus clouds are typically found very high in the sky. They are made up of ice crystals that come from freezing water droplets.

Stratus: “Stratus” is the Latin word for layer or blanket. Stratus clouds form a low layer that can cover the entire sky like a blanket. They are generally gray and dull and may contain rain or snow.

- Describe how wind, water and ice shape and reshape the Earth’s land surface by eroding (wearing away) rock and soil in some areas, and depositing them in other areas (e.g., dunes, deltas).
- Describe how freezing, thawing and plant growth reshape the land surface by causing the weathering of rock.
- Describe evidence of changes on Earth’s surface in terms of slow processes (e.g., weathering, mountain building, deposition) and fast processes (e.g., volcanic eruptions, earthquakes, landslides).



Life Sciences

What this means: *Understanding the structure and function of living systems and how they interact with the environment.*

- Compare the life cycles of different plants including germination, maturity, reproduction and death.
- Relate plant structures to their specific functions such as growth, survival and reproduction.
- Group common plants according to their traits (e.g., tree leaves, flowers, seeds, roots).
- Explore that fossils provide evidence about plants that lived long ago and the nature of the environment at that time.



Physical Sciences

What this means: *Understanding physical systems, concepts and properties of matter, energy, forces and motion.*

- Identify the characteristics of simple physical and chemical changes.



Check your understanding: **Simple Physical and Chemical Changes**

Physical: Examples of physical changes include changing ice to water through heating or changing water to ice through cooling.

Chemical: Examples of chemical changes include burning paper or combining vinegar and baking soda.

- Explain that matter has different states (e.g., solid, liquid, gas) and that each state has specific physical properties.
- Compare ways the temperature of an object can be changed (e.g., rubbing and heating of metal).



Science and Technology

What this means: *Understanding the relationship between science and technology to design and construct devices to solve problems.*

- Explain how technology from different areas (e.g., transportation, communication, health care, agriculture, entertainment, manufacturing) has improved human lives.
- Explore how technology and inventions change to meet people’s needs and wants.
- Describe, illustrate and evaluate (assess) the design process to solve a problem.



Scientific Inquiry

What this means: *Using scientific processes to ask questions, conduct investigations, gather, analyze and communicate information.*

- Use the correct tools and safety procedures to measure and record length, weight, volume, temperature and area in metric and English units.
- Study a series of events and/or simple daily or seasonal cycles and determine the patterns and what will most likely occur next.
- Develop, design and conduct safe, simple investigations or experiments to answer questions and describe how comparisons may not be fair if the conditions are not kept the same between experiments.
- Write instructions and communicate data in a way that allows others to understand and repeat an investigation or experiment.



Scientific Ways of Knowing

What this means: *Learning how to think scientifically and understanding how people have shaped the study and practice of science.*

- Tell the difference between fact and opinion and explain that scientists do not rely on claims or conclusions unless they are supported by observations that can be confirmed.
- Record the results and data from an investigation and make a reasonable explanation.
- Explain differences in an investigation using evidence or proof to support the findings.
- Explain why keeping records of observations and investigations is important.

Tips and Activities

- ✓ Observe the sky together. Identify the objects in the sky and define and discuss their significance and location. For example, observe the sun's position in the morning, mid-day and evening.
- ✓ Identify types of clouds present in the sky and determine what type of precipitation they will produce.
- ✓ Graph the number of hours of daylight over a two-week period in the early fall, in January and again in late spring. Ask your child what is happening. How does he or she explain the differences in the length of the day?
- ✓ Identify unique land features of your area and discuss how they were formed.
- ✓ If you travel with your child to other parts of the state and country, identify differences in the land features and weather and explore reasons for those differences.
- ✓ Start a small garden and let your child care for it. Discuss what the garden needs for survival and why.
- ✓ Have discussions with your child comparing entertainment, communication and manufacturing now and when you were a child.
- ✓ Discuss news articles about science from the newspaper and determine what is fact or fiction. Ask yourselves the question "Is this possible and why?"



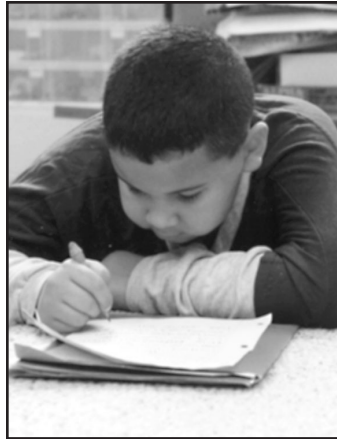
Focus: The Study of Ohio



History

What this means: Understanding the pattern of events that have happened in the past.

- Make timelines to show the order of important events in Ohio history.
- Explain the causes and effects of the frontier wars on American Indians in Ohio and the United States.
- Explain how Ohio became a state, including the terms of the Northwest Ordinance.
- Explain how canals and railroads changed settlement patterns (where people lived) in Ohio and how they affected Ohio's economic and political status in the United States.
- Explain the importance of inventors such as the Wright brothers, Charles Kettering, Garrett Morgan, Granville Woods and Thomas Edison.



Check your understanding: **Inventors**



Wright brothers:	Invented and flew the first airplane.
Charles Kettering:	Invented the first electrical ignition system.
Garrett Morgan:	Invented the traffic light and a device similar to the gas mask.
Granville Woods:	Invented improvements to electric railways; air brakes; telephones; telegraphs; a chicken egg incubator; and an apparatus for an amusement park ride.
Thomas Edison:	Invented the light bulb and phonograph.



People in Societies

What this means: Identifying both similarities and differences in the customs and traditions of various groups of people.

- Describe the way of life of various groups who have settled in Ohio over time, including:
 - a) Prehistoric people;
 - b) Historic Indians of Ohio;
 - c) European immigrants;
 - d) Amish and Appalachian populations;
 - e) African-Americans;
 - f) Recent immigrants from Africa, Asia and Latin America.
- Describe the impact of the expansion (growth) of European settlements on American Indians in Ohio.
- Explain the reasons people came to Ohio including opportunities in agriculture; mining and manufacturing; family ties; and religious and political freedom.



Geography

What this means: Identifying the location of places, understanding how places are connected and how human activity affects them.

- Measure the distance between places on a map.
- Use cardinal (north, south, east, west) and intermediate (northeast, southwest, northwest, southeast) directions to describe the location of places.
- Describe the location of Ohio compared to other states and countries.
- Use maps to identify the location of places in Ohio including Lake Erie, rivers, plains, the Appalachian Plateau, bordering states, the capital city and other major cities.
- Explain how resources, transportation and location influenced the development of cities, as well as industries in Ohio such as oil, steel, rubber and gas.



Economics

What this means: Understanding how our economic system works in order to make decisions.

- Explain how resources available in Ohio are used in producing goods and services which are traded for other goods and services.
- Explain how business people use natural resources, labor and equipment to produce goods and services, and that they attempt to make a profit by taking risks.
- Explain ways in which people and households obtain and use income.
- Explain why many jobs in Ohio create products that are sold in other countries and why products from other countries are sold in Ohio.



Government

What this means: Understanding why government is necessary and how it works.

- Explain major responsibilities of each of the three branches of Ohio's government.

Check your understanding: Branches of Government

Legislative branch:	Makes the laws and is headed by the General Assembly.
Executive branch:	Carries out/enforces laws made by the General Assembly and is headed by the governor.
Judicial branch:	Interprets and applies the law and is headed by the Ohio Supreme Court.

- Explain why elections are used to select leaders and decide issues.
- Explain the purpose of a democratic constitution:
 - a) To provide a framework for government;
 - b) To limit the power of government;
 - c) To define the authority of elected officials.

- Explain that the Ohio Constitution tells how the state government should be organized and how it guarantees the rights of people.



Citizenship Rights and Responsibilities

What this means: Preparing to become active citizens.

- Describe ways in which citizens can promote the common good and influence their government through activities such as voting, communicating with officials, participating in organizations and doing volunteer work.
- Explain why personal and civic responsibilities are important.

Check your understanding: Examples of Personal and Civic Responsibilities

Civic responsibilities: Obeying the law, respecting the rights of others.

Personal responsibilities: Taking advantage of the opportunity to be educated.





Social Studies Skills and Methods

What this means: *Collecting information, organizing it and using it to make decisions.*

- Get information about state issues from different sources such as atlases, encyclopedias, dictionaries, newspapers and computers.
- Locate information using a glossary and index.
- Distinguish between fact and opinion.
- Read and interpret pictographs, bar graphs, line graphs and tables.
- Use a problem-solving/decision-making process which includes:
 - a) Identifying a problem;
 - b) Gathering information;
 - c) Listing and considering options;
 - d) Considering advantages and disadvantages of options;
 - e) Choosing and applying a solution;
 - f) Developing criteria for judging its effectiveness.



Tips and Activities

- ✓ Look at maps of Ohio with your child and locate places of interest like the towns where friends or relatives live, the location of parks, etc. Help your child calculate the distance and direction from your home.
- ✓ Visit historical sites. Ask your child what it might have been like to live in Ohio in the past.
- ✓ Your child will be learning about the American Indians who lived in Ohio. Ask your child what he or she learned about their way of life.
- ✓ Identify products in your home that have been made in Ohio and products that come from other places. Locate those places on a map or globe.
- ✓ Choose one product and discuss how it was made. What natural resources and equipment were needed? What types of work were involved?
- ✓ Watch the television news together. Discuss the events happening in Ohio and people in the news. Discuss issues that are being decided and how those decisions will be made.
- ✓ Call your child's attention to elections and campaigns. Discuss the qualities that you might look for in a candidate.
- ✓ Encourage your child to get a library card so that he or she will be able to use books and other resources needed for writing reports.

Note: Some of the tips and activities in this guide were derived from "parent tips" posted on the Web sites of Georgetown County School District in South Carolina (www.gcsd.k12.sc.us) and Chelsea Publishing House (www.teachervision.com). These resources were used with permission of the authors whom we gratefully acknowledge.

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